AMERICAN CHEMICAL SERVICE, INC. SITE
GRIFFITH, INDIANA

RESPONSE TO U.S. EPA COMMENTS ON SECTION 5.2 OF THE PRE-DESIGN WORKPLAN AND ASSOCIATED SECTIONS OF THE PILOT/TREATABILITY TESTING QAPP AND FSP

CLARIFICATION REQUIRED FOR RESPONSES TO COMMENTS

1. **Response to U.S. EPA Comment 59.**

   Incorporate the air monitoring requirements of SOW Section II.F.3 (Page 15) in Section 5.2.1. Paragraph 2.

   Response. Text has been added to paragraph 5.2.1 to reflect the air monitoring requirements.

2. **Response to U.S. EPA Comment 61.**

   A. Provide a brief description in Section C.3.3.1 of the factors (grain size, contaminant levels, moisture, oversized materials, etc.) that will be used to determine the "actual size and total tonnage removal from each pit." Be more specific concerning the criteria for determining how the soil sample will be composited from each pit to be submitted for laboratory analyses.

   Response. The primary factors that will be used to determine how much material to take from each pit will be safety, debris content, and previous samples indicating the vertical and horizontal extent of contamination in the particular area. Excavation will continue in each pit until one or more of the following conditions occurs: 1) debris is no longer being encountered, 2) we are below the deepest depth where contamination was previously identified, or 3) the side walls of the pit become unstable. The actual tonnage removed from each pit will be measured using an on-site scale as described in Section C.3.4.2 of Appendix C to the Pilot/Treatability Study QAPP. The screened material and the screen reject (oversized) material will both be weighed. Grain size, contaminant levels, and moisture content are not needed to determine the actual tonnage. A general discussion similar to this response has been included in Section C.3.3.1 of Appendix C. With respect to the collection and compositing of samples, please see response to Comment 17.

   B. In Section C.3.4.2. discuss methods or procedures that might have to be used if fugitive emissions during screening become a problem.

Response. The five components of the Pretreatment/Materials Handling Study (PMHS) that have the potential for fugitive emissions include excavation, stockpiling for drainage/drying, screening, stockpiling of screened soils in preparation for sampling and weighing, and transferring material back to the excavation pit. The plan was written to limit the number of pits excavated at one time to be no more than three to attempt to minimize emissions. In addition, the plan states that if emissions become a problem offsite, plastic sheeting will be used to cover the soil stockpiles or the hole left from the excavation to further minimize emissions. Since this is anticipated to be a short duration test (i.e., 2 weeks or less), no further efforts are planned to address fugitive emissions associated with the excavation, screening, or transferring of materials. Section C.3.4.2 of Appendix C has been revised to clarify this issue.

C. Add to Section C.4.1. sampling and analyses of unscreened samples as well to determine the potential loss of volatiles during handling and screening processes. Describe how decon water in Section C.6.1. will be managed.

Response. Sampling and analysis of unscreened material was considered during the planning stages, but was eliminated from consideration due to the difficulty in obtaining a representative sample of the unscreened soil to compare with the screened soil. In addition, the ambient air monitoring will provide a measurement of the actual impact of fugitive emissions from the excavation activities. Therefore, sampling of the unscreened soil is still not included in the plan.

With respect to the managing of decon water, the last sentence of Section C.6.2. states that the water generated by decon activities will be stored on site for future processing. The words "in the on-site treatment plant constructed for treating the extracted groundwater" have been added to the end of the sentence for clarity.

3. **Response to U.S. EPA Comment 63.**

In Section D.1.2. of the Pilot/Treatability Testing QAPP and FSP, change "temperature required" to "Temperature and residence time required."

Response. The plan does not determine the impact of residence time on contaminant concentrations and the plan has not been revised to include the determination of this relationship. Focus recognizes that both residence time and soil treatment temperature have an impact on the residual concentration of contaminants of concern in the treated soils. However, Focus does not feel that obtaining the relationship between residence time and residual contaminant concentration is necessary. Residence times for thermal treatment systems can range anywhere from 10 minutes to 2 hours depending on the system and the desired treatment conditions. Typical residence times range from 10 to 30 minutes. Focus typically designs treatability tests at a constant residence time of approximately 15 to 20 minutes while varying soil treatment temperature. Any

residence time in excess of those demonstrated in the testing should be acceptable as long as the same exit soil temperature is obtained.

4. **Response to U.S. EPA Comment 64.**

Add heating value to the primary characteristics affecting a thermal process in Section D.3.1. of the Pilot/Treatability Testing QAPP and FSP.

Response. The plan has been revised to include heating value (See Table D.4-3 and Section D.3.1 of Appendix D to the Treatability Test QAPP). Heating value was actually implied in the "organic content" parameter listed in Section D.3.1 of the plan. The heating value of the feed material is a direct result of the organic content of the material.

5. **Response to U.S. EPA Comment 65.**

A. Include a reference to Section D.3.1.2. in Paragraph 1 of Section D.3.1. in the Pilot/Treatability Testing QAPP and FSP.

Response. The plan has been revised to include the indicated reference.

B. In Section D.5.2. indicate how the effect of thermal treatment on the leachability of metals in the test soils will be determined.

Response. Section D.5.2 of Appendix D to the Treatability Test QAPP has been revised to indicate that the effect of thermal treatment on the leachability of metals will be evaluated by comparing the results of TCLP analyses for metals on the feed and treated soils. Tables D.4-3 and D.4-5 have been revised to indicate the metals that will be included in the analysis (i.e., arsenic, beryllium, cadmium, chromium, antimony, barium, lead, mercury, silver, thallium, potassium, sodium, and phosphorus at a minimum).

SPECIFIC COMMENTS ON SECTION 5.2, LTTT AND PRETREATMENT/MATERIAL HANDLING STUDY IN THE OFCA.

6. **Page 5-2, Section 5.2.1., Objectives.**

Clarification must be provided in the text that with respect to whether LTTT can meet the performance standards, it is important to recognize that the study itself may not be conclusive as to whether LTTT can meet the treatment standards but will be able to demonstrate whether significant reductions as a result of thermal desorption.

Response. Since the laboratory testing will be conducted under more ideal conditions than those associated with a full-scale remediation, negative results can be deemed to be conclusive but positive results need to be qualified. For

example, if the laboratory LTTT tests demonstrate that the performance standards cannot be met with this technology, it would be concluded that the standards cannot be met with a full scale system at the site. On the other hand, if the LTTT tests show that the performance standards can be met, it is likely that the standards can be met in the field. This assessment would need to be qualified based on how difficult it was to meet the standards in the laboratory study and based on how the test sample initial concentrations compare to what might be encountered in the field. Text will be added to Section 5.2.3.2 to indicate this understanding.

7. With significant quantities of metals and chlorine in a waste feed stream, thermal desorption may cause volatilization of some of those metals. In addition to temperature-related volatilization, chlorine could cause the formation of metal chloride compounds, which are a generally more volatile species than other metal compounds. Hence, state that full scan for metals will be conducted on the before and after samples. Indicate that the rate of these metals will be discussed in the final report.

   Response. Conducting a metals balance on the feed and treated soil is one of the objectives listed on Page 1 of the plan (Section D.1.2). This will be accomplished by analyzing the feed and treated soil for total metals (Tables D.4-3 and D.4-5). Comparison of the results of these analyses will provide an indication of any significant metal volatility.

8. Since dioxins will not be analyzed in the XAD resin, EPA will have to assume that the resins are contaminated with dioxins if the liquid residual is contaminated with dioxins. State this assumption in the text.

   Response. Section D.2.2.2 in Appendix D of the Treatability Test QAPP has been revised to agree that if dioxin/furans are found in the impinger water that an analysis of the XAD resin downstream would likely show dioxin/furans present as well. However, based on Focus' treatability experience with similar soils and this equipment, if dioxin/furans are in the offgas, either from generation or desorption, it will be identified in the off-gas water impingers. The primary reason for this analysis is not to provide a mass balance of these contaminants, but only to determine if they are present in the off-gas stream.

9. **Table 5-1, Page 5-3.**

   For groundwater, change "1,2-dichlorobenzene" to "1,4-dichlorobenzene."

   Response. Incorporated.

COMMENTS PROVIDED WITH REGARD TO THE QUALITY ASSURANCE PROJECT PLAN (QAPP) PERTAINING TO LOW TEMPERATURE THERMAL STUDY AND MATERIAL HANDLING STUDY.

10. **Section II, PROJECT ORGANIZATION AND RESPONSIBILITY.**

A. Specifically state what laboratory (i.e., name and location) will be performing analyses for this project, please state that the affiliated laboratory will follow the proper quality control; measures and have acceptable standard operating procedures. This will provide assurance to the agencies of the consistency in quality and performance.

Response. Dioxin/furan analysis will be subcontracted by IEA to Quanterra Environmental Services (formerly Enseco) of West Sacramento, California. As requested, Quanterra West Sacramento has been included in Section 2.0. In addition, changes have been made to Section 7.0 (analytical methodology) to include Quanterra West Sacramento. All information relating to Quanterra throughout the QAPP, except that specifically relating to air analysis, applies to both Quanterra facilities, i.e., lab organization, QC procedures, preventative maintenance, etc.

B. Please provide the organization chart, Figure 2-1, which was not included.

Response. A copy of Figure 2-1 was included at the end of Section 2.0. A copy is attached to these comments in case your copy of the QAPP was missing the figure.

C. **Section 2.4.**

Describe the responsibilities **IT Corporation Technology Development Laboratory,** Knoxville TN, and **Hazen,** Golden CO may have in this project. See Appendix D Section D.1.4.

Response. Since submitting the QAPP, IT has been selected to conduct the thermal treatability study according to the plan; therefore, Hazen will have no responsibilities in this study. Section D.1.4 initially listed general responsibilities for IT but has been revised to include more specific responsibilities from the plan.

11. **SECTION III, QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA.**

A. **TABLE 3-1, also TABLE 3-4 and TABLE 3-5.**

The tables indicate that As is analyzed by SW-846 7060, Tl by SW-846 7841, and Se by SW-846 7740. Provide SOPs in ATTACHMENT A for these methods, if they are going to be employed.

Response. Except for mercury, TJA 61E Trace by Method 6010A will be used for all metals analysis for soil and water samples. All tables have been revised to reflect this change.

12. **Section IV, SAMPLING PROCEDURES. TABLE 4-1 TO-14 VOCs.**

Canisters should be analyzed within 14 days. See Section 8.5 of SOP COI-MS-0003.

Response. The holding time for TO-14 VOCs in Table 4-1 has been revised to 14 days.

13. **Section V, CALIBRATION PROCEDURES AND FREQUENCY, Section 6.1, typo.**

Amend Attachment E, to **Appendix** E.

Response. The text has been changed to reflect Appendix E.

14. **Section VI, ANALYTICAL PROCEDURES.**

Discuss field measurements procedures and reference location of SOPs (Appendix E).

Response. Text has been added to Section 6.1 that identifies the type of data that will be collected using field meters and briefly describes how the meters will be calibrated.

15. **Section VII, PREVENTATIVE MAINTENANCE PROCEDURES.**

A. Section 11.1.

Reference location of field instrument SOPs (Appendix E).

Response. The requested reference has been added to the text.

B. Section 11.2.

Reference location of lab SOPs (Attachment A).

Response. The requested reference has been added to the text.

15. **Section VIII, DATA VALIDATION PROCEDURES.**

Incorporate this information into Section 9.0. The standard QAPP Element SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS was overlooked. Discuss Precision and include formula to calculate RPD (or reference Section 3.2.1.), Accuracy and include formula to determine %Rec (or reference Section 3.2.2.), and Completeness and include formula to calculate this project objective (or reference Section 3.2.5.).

Response. The requested reference has been added to the text.

GENERAL COMMENTS ON APPENDICES ARE PRESENTED BELOW

SPECIFIC COMMENTS ON APPENDIX C - PRETREATMENT/MATERIAL HANDLING PILOT STUDY ON BURIED WASTE IN THE OFF-SITE CONTAINMENT AREA; FIELD SAMPLING PLAN AND TESTING PROCEDURES.

16. **Page 2, Section C.2.2., EQUIPMENT DESCRIPTION.**

The text states "that a 3/4 inch screen is available if a finer screen is determined to be desirable." Describe further why it may be desirable to use a finer screen and the intended purpose of the data. It is important that the screens not be used to remove material that can successfully be treated. To this end, a 3/4 inch screen may be too small. Discuss the intended use of the 3/4 inch screen. See also comment 23.

Response. It is anticipated that the 3/4 screen will not be necessary.; However, a 3/4 inch screen will be available if it is determined by visual observation that the excavated soils contain organic debris smaller than 2 inches that could cause problems (i.e., smoldering, generation of carbon monoxide, volatilization of organics, or carryover to a baghouse) in a thermal desorption system.

17. **Page 6, Section C.4.1., SAMPLING PROCEDURE.**

Describe that the 5 gallon sample taken from each test pit will be a composite of screen soil from each test pit, and that the intention is to obtain as representative as possible of a sample. Be more specific concerning the criteria for determining how the soil sample will be composited from each pit to be submitted for laboratory analyses.

Response. A fairly detailed description of the field compositing procedure for each test pit sample was provided in Section C.4.1 in Appendix C of the Treatability Test QAPP. The procedure has been revised to indicate the purpose of compositing numerous grab samples is to provide a representative sample. The procedure for compositing of the soils from each test pit for purposes of thermal

treatability testing is described in Section D3.1.3 in Appendix D of the Treatability Test QAPP.

18. **Page 6, Section C.8.2., DATA REDUCTION AND EVALUATION AND REPORTING.**

Discuss the timing of submission of the report to U.S. EPA and IDEM. As was represented in Figure 1-1, the draft report for Task 1 is due to the agencies within 6 weeks of field mobilization. As was represented in Figure 1-1, the draft report for Task 2 is due within 4 months of field mobilization. Respondents must initiate field mobilization by December 15, 1996, weather permitting. If the weather would preclude producing representative and reliable data, then the work shall be postponed until the spring. In that case, the field mobilization shall occur no later than May 15, 1997.

Response. The schedule for the treatability studies (Figure 5-4 in Section 5 of the PreDesign Work Plan and Figure 1-1 in the Pilot/Treatability Testing QAPP and FSPs) has been updated to reflect the current situation. As shown in the figure, field activities would not start until spring of 1997. The timing for submission of the reports is included as the respective tasks in the schedule.

SPECIFIC COMMENTS ON APPENDIX D - LTTT TREATABILITY STUDY ON BURIED WASTE IN THE OFF-SITE CONTAINMENT AREA; TESTING PROCEDURES

19. **Section D.1.4.**

See QAPP Comment 10.C. above.

Response. See response to Comment 10.C.

20. **Page 1, Section D.1.4., Project Organization and Responsibility.**

Describe the responsibilities of **IT Corporation Technology Development Laboratory**, Knoxville TN, and **Hazen**, Golden CO may have in this project.

Response. See response to Comment 10.C.

21. **Page 1, second to last bullet, Section D.1.2., Objectives.**

It will be very difficult to determine if dioxins/furans are being formed during the treatability test. The soil mass used in this test is insufficient to have an accurate quantification of dioxin/furans before and after treatment. The treatability study will indicate the removal effectiveness for dioxin/furans and the residuals where they will concentrate. Hence, state that the purpose is not to determine if dioxin/furans are forming, but are for full-scale design purposes.

Response. The requested change has been made to the plan in Section D.1.2 in Appendix D of the Treatability Test QAPP.

22. **Page 1, last bullet, Section D.1.2., Objectives.**

Add "water balance" as well. U.S. EPA's experience is that attempts have been made to perform carbon and chloride balances around both pilot and treatability-scale thermal desorption systems. These attempts have not been very successful. The light hydrocarbon losses, transformations of the carbon compounds, and some oxidation makes it very difficult to track where the carbon goes. This does not include the interferences from natural soil humic material and losses in the glassware. The same is true for chloride; the natural occurring salts in the soil interfere with any chloride mass balance. Hence, as a further test on treatability system, conduct a water balance as well.

Response. The plan objectives have been modified to indicate that a water balance will be conducted. The purpose for attempting a mass balance for carbon and chloride is to show general trends in the fate of these analytes. By analyzing for total chlorides in the feed soil, treated soil and impinger water, Focus has been able to approach 90 percent closure on a chloride balance. By measuring leachable chlorides in the feed and treated soil, conversion of organic chloride to inorganic chloride can be estimated. The measurement of total organic carbon in the soils and impinger water and concentration of THC and CO in the offgas give a general indication of the fate of total carbon in the system. These results can be useful in estimating the impact on air pollution control systems.

23. **Page 2, 1st bullet. Section D.1.2. Objectives.**

The text states that "debris testing will be performed (page 7, 2nd paragraph) if in significant quantity. Define "significant" (i.e., 10 or 20%) and how the field personnel will make the decision.

Response. The major concern is the organic load to the air pollution control system if organic debris is present in the feed soil. The type of debris, it's physical size/shape, as well as it's weight percent will be considered for the determination of whether the debris constitutes a significant quantity. Questions such as: Is the debris screenable? How much of it is organic (plastic, paper, wood) will be considered when determining whether the additional tray test will be conducted. A best engineering judgment will be made based on these factors. In general, if the screened soils contain greater than 1 wt% organic debris that passes the 2 inch screen, additional screening with the 3/4 inch screen will be attempted to obtain an estimate of the small organic debris content of the soil and provide a sample for treatability testing as defined in Appendix D. The screening protocol has been revised in Section C.3.4.2 of Appendix C to the Treatability Test QAPP to more clearly define the anticipated methodology.

Appendix D indicates the additional tray test for the debris sample will be qualitative only, looking for physical and chemical changes in the debris to determine whether to expect any additional organics overhead from the debris. The additional RTA test will provide data for estimating the potential contribution of the organic debris to the offgas from the thermally treated soils.

24. **Page 10, Section D.3.2.1., Test Conditions, first paragraph.**

The debris will be tested at one temperature and the analysis will be qualitative only. U.S. EPA believes that this is appropriate.

Thermal desorption (TD) of wood, and plastic, is not recommended. Measurement of TD effectiveness on wood and plastic is not standardized, and there are many questions about what the results mean. Discuss the intended plan for wood and plastics.

It is important that the screens not be used to remove material that can successfully be treated. To this end, a 3/4 inch screen may be too small. Discuss the intended use of the 3/4 inch screen.

Response. See the response to Comments 16 and 23 above.

25. **Page 10, Section D.3.2.1., Test Conditions, first paragraph.**

The document states these "residence times are...representative of process operating conditions in full-scale thermal desorption equipment." However, the Workplan proposes to use "0" as the residence times on both the tray test and the rotary thermal apparatus test. Define further how the tests will be conducted and why it is considered "0" residence time. Also, state the residence time will be greater than "0" for the full-scale thermal desorption process. Therefore, while the residence time used in the treatability test is not "representative" of full-scale operations, it is conservative, and the results derived in full scale implementation are predicted to be better than those derived in the treatability tests.

Response. The plan does not state that the resident time will be "0". Section D.3.2.1 of Appendix D states that the soil will require approximately 18 minutes of heatup time and that the hold time at soil treatment temperature will be held constant at "0" minutes. Therefore, no changes have been made to the plan.

Full-scale thermal desorption equipment is typically operated in a continuous feed mode. The soil is fed to the unit at ambient temperature and is heated while moving through the length of the chamber. The time it takes the soil to progress through and exit from the chamber is the residence time. The temperature of the soil is at a maximum when the soil exits the chamber, therefore, the resident time "at maximum soil treatment temperature" is zero. Since the tray tests and the

RTA tests are batch processes, a "ramp time" is used to simulate the soil heating process through a full-scale chamber. The ramp time is analogous to the chamber residence time in a full-scale continuous system. In batch systems, the soil treatment temperature can be achieved and maintained for a specified period of time (hold time), if desire, however, duplication of hold time at a given temperature is typically not possible in full-scale equipment.

26. **Tables D.4-2 through D.4-9, Analytical Requirements:**

A. There should be references to the analytical methodology. SW-846 Methods are noted, but it is not clear that the labs are working with, and familiar with, the latest promulgated updates. The methods numbers need to be updated to include the appropriate letter - for example, the method for VOCs is (SW 846) 8260A; the method for SVOCs is 8270B. The method listed for PCBs is "8080." The number should be 8081 with a preparation method of 3050.

Response. Agreed. The workplan will be amended to include all references to he latest promulgated method numbers.

B. Denote the Data Levels by those given in QAPP TABLE 1-2: A, B, C, rather than 2 and 4.

Response. Agreed. The workplan will be amended to referenc the data levels as shown in Table 1-2.

C. Correct the typo by amending the parameter Total Sulfur, to **Total Sulfate**.

Response. The desired test parameter is Total Sulfur, not total sulfate. Therefore, no changes have been made to the plan.

27. **APPENDIX E - STANDARD OPERATING PROCEDURES FOR FIELD INSTRUMENT CALIBRATION**

A. **Section 4.3.2.1. item 2) pg 7/30 typo.**

Amend 0.1, to **.01**.

Response. Incorporated.

B. **ATTACHMENT 2.**

Pages 130 and 132 are missing, please include.

Response. The missing pages are attached to these comments.

GENERAL AND SPECIFIC COMMENTS ON ATTACHMENT A - LABORATORY SOPs.

GENERAL COMMENTS:

28. It would be helpful to include a Table of Contents for this attachment and a cross reference so that it is clear what SOP applies to which of the treatability studies.

Response. The SOPs for each analytical method to be used during the treatability and pilot studies are included in Attachment A. As discussed in Section 2.0 of the QAPP, the same laboratory will be used for each treatability and pilot study. Therefore, the same SOPs will be used for each specific analysis. As requested, a table of contents has been added to Attachment A.

SPECIFIC COMMENTS

29. **SW846 Method 8260A (Water and Soil) MSS01201.NC.**

A. **Section 2.1 and Table 1.0.**

Include Retention Times (RTs) for the compounds listed in Table 1.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson.

B. **Section 10.10 and Table 2.0 (PQLs).**

Table 2.0 was not provided with this SOP, please append.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

30. **SW846 Method 8260A Low Concentration (Water) MSS01101.NC; Section 2.1 and Table 1.0.**

Include Retention Times (RTs) for the compounds listed in Table 1.0.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

31. **Zero Headspace Extraction for Volatile Analysis SPS02100.NC**

It may be better to incorporate this Document with Doc #SPS02001.NC. If this is not easily done, then the 2 SOPs should be cross-referenced.

Response. To incorporate the zero extraction for volatile analysis SPS02100.NC SOP into method SW-846 8260A would require a complete revision to the laboratory SOP, which could not be easily accomplished. Instead, the documents were cross referenced in the TOC and method cover sheets.

32. **GC/MS Method 8270 MSS00204.NC.**

A. **Section 2.1 and Attachment A.**

Include RTs and Quantitation Ions for the compounds of Attachment A.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

B. **Section 10.6.1.**

Six surrogates are given here and in Attachment A, pg 3, but 8 surrogates are listed in Table 5.0. Please resolve the potential disparity.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

33. **SOP for QC Method 8080 Pesticides + PCBs in Water GCS00900.NC.**

Provide RTs for the compounds listed in Table 6 for the columns that will be utilized in the analysis.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

34. **SOP for GC Method 8080 Pesticides + PCBs in Soil GCS01000.NC.**

A. If the laboratory, can run method 8081, then it is the preferred method. If so, provide a SOP for 8081.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

B. Provide RTs for the compounds listed in Table 6 for the columns that will be utilized in the analysis.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

C. **TABLE 6.**

Since this SOP is for Soil, express the PQLs units in **mg/kg**.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

D. Provide Clean-up procedures that may have to b used for Soil/Waste analysis.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

35. **SOP for GC Analysis of Herbicides in Water (8150) GCS01302.NC.**

This SOP should be designed for the analysis of Pentachlorophenol according to all the tables in the QAPP, unless 2,4-D and 2,4,5-TP are now project parameters. If these acid herbicides are parameters, include them in the QAPP.

Response. Method SW-846 8151 has been included in the SOPs. 2,4-D and 2,4.5-TP are not project parameters, but included in the standard anlayte list for both methods SW-846 8150 and 8151.

36. **SOP for TJA 61E Trace by Method 6010A MES02500.NC.**

A. Provide digestion procedures for aqueous samples.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson.

B. **Section 11.0.**

Describe the general instrumental parameters and include a table of the recommended wavelengths for the project analytes.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

C. **Table Two, pg 10/10.**

Express the PQLs in **mg/kg** units, as well.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson.

D. **Table Two, pg 10/10.**

For the Elements Sb, Ca, Mg, and K the PQLs are higher than the Reporting Limits of ATTACHMENT C TABLE C-8. Please resolve the possible disparity.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson.

37. **SOP for Hexavalent Chromium in Soil CVS03902.NC. Section 13.0.**

Discuss the corrective action for the Post-Digestion MS. If the QC criteria are not met, the sample or solution may have to diluted and reanalyzed.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

38. **SOP for Chloride in Water and Soil CVS00102.NC, Section 11.1.**

This section can be deleted, since soil samples will not be tested for **Chloride**.

Response. The referenced section is part of the laboratory's SOP for chloride analysis and the SOP can not be easily revised. Therefore, this SOP has not been changed.

39. **SOP for Acidity.NC, Section 12.2.**

Include calculation for MS % REC.

Response. Please see response in the attached letter from Linda Mitchell of IEA to Deb Drain of Montgomery Watson

40. **ATTACHMENT C PRACTICAL QUANTITATION LIMITS, TABLE 5-1**

The Chemical 1,2-dichlorobenzene, should be **1,4-dichlorobenzene**.

Response. Both 1,2-dichlorobenzene and 1,4-dichlorobenzene are included in the referenced table. No revision is required to the referenced table.